

Perspectives on Work, Life, and Existence (first edition)

Currently the US Federal minimum wage is at \$7.25 per hour, while the national average of gasoline is at \$2.125 per gallon. A gallon of gas contains about 131.9 million joules of energy, or the equivalent of nearly two weeks of manual human muscle power and labor, given that 131.9 mega joules is about 31,491 calories and the typical human male consumes 2,600 calories per day. The minimum wage being a metric of the lower bound of what an hour of work is worth – even if it is merely putting groceries into a plastic sack at the checkout counter – and the average price per gallon of gasoline being a standard measure of the price, cost or value of one of modern societies main energy commodities, the implications are indeed far-fetching. This means that even at the most basic levels of compensation, compared to our stone-age brethren, we now enjoy at a minimum at least a 288 times energy multiple factor equivalent. To illustrate one example, the average U.S. mpg is around 25.5, and so an hour's worth of work at minimum wage equates to approximately 3.4 gallons of gas, which is enough to move an average motor vehicle 87 miles. Since the average car can reach max-continuous speeds of 87 mph or faster, this means an hour's worth of work from even the lowest paid members of our society will transport and propel him or her at 87 miles per hour for one entire hour for a total of 87 miles traversed. It would take days if not weeks for a person to naturally walk 87 miles, and it would take weeks if not months for that same person to push a car the same distance of 87 miles. And to look at it from another perspective, the fastest man on earth, Usain Bolt, is capable of sustaining an instantaneous top speed of about 30 miles per hour for only a few seconds, and yet the lowliest paid workers of our society can reach speeds of nearly 90 mph, sustained perpetually.

Wealth creation is actually energy extraction, conversion and consumption. The only reason the above analogies and examples are possible is due to the fact that humans have been fortunate enough to be gifted with an abundance of stored energy from planet earth, in the forms of hydrocarbons (coal, crude, natural gas) and other sources. For billions of years, through a process of photosynthesis and thanks to the natural energy from our closest star the sun, our planet has steadily built up a massive reserve of energy, mainly in the form of hydrocarbons underneath the ground. And yet in less than 150 years since the industrial revolution began, we have globally already consumed more than half of all available hydrocarbons and nearly all of the sweet crude, and other easy-to-extract low-hanging-fruit energy sources on earth. The implications are indeed foreboding.

In high school and through much of our higher education we are all taught the concept of the “time value of money”. We are told that if we save a little and put aside a portion of our money to allow it to grow (“make your money work for you”) that by the time we retire at age 65 or 70 or older, that given a reasonably sustained interest rate and steady overall rate of return of the growth of our savings due to compound interest, etc it would have amassed into a small fortune of a few million dollars or more. Putting aside the fact that the “time value of money” doesn’t take into account for the fact that a person at age 75 cannot enjoy life in nearly as gratifying a manner as someone spending the same amount for similar goods, services and experiences at age 25, there still remains the fallacy of perpetual growth. All of the above is indeed predicated upon the assumption of perpetual and continuous global growth. In pre-agricultural times when there were no forms of monetary accounting nor any surplus, we consumed what we had and when we had it, and anything extra that we set aside would either

retain value or lose value over time, naturally and even from a physics thermodynamics and entropy standpoint, it would certainly never “grow” in value. So taken in aggregate and in general, the growth of an individual’s savings is directly coupled to the overall ability of society to grow as a whole. By deferring expenditures and putting that aside and allocating that portion of their monies to go towards capital to helping society and civilization to continue to expand, populate, and grow, the individual is repaid in kind at the end of his or her life as their investment in the entire pool is conflated with the overall growth of society. By putting a piece of their money into the pie, their individual slice grows larger as the entire pie as a whole expands. (A rising tide lifts all boats). Modern economics and all macroeconomic models rely upon the assumption of perpetual growth as a built-in component. From fiat currency to fractional reserve banking systems to petrodollar hegemony and quantitative easing, etc it is simply the way we have structured our society and our financial systems by assuming that we will always grow ourselves out of debt and using the assumption of tomorrow’s growth as collateral for today’s level of expenditures. The issue is modern society and thus growth as we know it to be, are both entirely predicated upon the prerequisite ability to continue to extract, process, convert and consume energy at increasingly faster and faster rates. Indeed our entire global civilization is wholly dependent upon the sort of specialization-of-skill, just-in-time logistics, and economics-of-scale that only a massive interconnected global population sustained by very high density net energy sources (hydrocarbons) could provide. Without airplanes, trains, ships, trucks and without electricity, computers, telecommunications, and the Internet etc none of any of this would be possible today.

But in order to keep the lights running, so to speak, and to sustain and maintain this massively complicated global structure we need a continuous supply of high density energy sources. Mathematically speaking, perpetual growth in a finite environment (earth) is impossible, so sooner or later the pyramid scheme will collapse if society continues down its current course trajectory.

In our ancestor's nomadic era and during pre-agricultural times, early humans spent most of their day hunting and gathering for food. During this period not only were there no concept of accumulation of wealth, but we relied entirely upon our own human abilities for survival without any sort of physical or intellectual multiplier-effects. A week's worth of labor was what muscle and mind could produce within a week. There were no diesel Caterpillar machines for labor nor Boeing jumbojets for transport or Intel processors for compute. Everything we did was done by hand and carried on foot and decided by brain. And thus due to natural constraints the human population always remained within Mother Nature's natural carrying capacity for our species (500 million worldwide vs the current global 7.4 billion and growing).

There is no "going back the way things were" without a massive implosion of the global human population. The only way forward in which the system and thus the fabric of modern society and civilization can maintain itself is by going forward, not backwards.

In pre-industrial times the vast majority of the population (more than 90%) was on farms and preoccupied with growing food for survival. Nowadays, hired farmworkers make up less than 1 percent of all U.S. wage and salary workers. From building bridges, to constructing walls, to plowing fields, industrial machines have taken over the need for manual human labor especially as it pertains to man muscle power. As long as it is fed an high density energy source in the form of gas or diesel hydrocarbons, a single Caterpillar dozer or individual John Deere tractor can do the equivalent muscle power work of dozens if not hundreds of men. Since industrial times and after the internal combustion engine began coming into play in earnest, these industrial machines have entirely augmented and indeed replaced the need for manual human labor.

Ever since the industrial revolution took over, human jobs and our concept of “work” has been steadily relegated to intellectual activities and pursuits. Farms still needed someone to operate and drive the tractors. Construction crews still needed engineers to design the bridges and the highways and to provide them with the blueprints and the instructions on how and where and when to build. Airplanes still needed pilots to navigate and to fly them. And so on and so forth.

With the advent of the digital and computer ages, this progressive trend continued. Once the first pocket sized calculators came onto the scene, we started increasingly load shedding and offloading the most basic elements of thinking and mental work and thus relegated them to a class of “mental menial-labor”. Simple things like mathematical addition, subtraction, multiplication and division were no longer done in the mind using mental math nor on paper and pencil with hand, it was soon simply accepted that these tasks were better left to calculators and computers which could do them far faster and more accurately, (In 1874 it took William Shanks 15 years to calculate PI to 527 digits by hand, today on my home desktop computer using a free tool called y-cruncher by Alexander Yee, I can calculate PI to several billion digits in only a few short seconds.), leaving the human free to do other more meaningful work such as applying intuition to solve problems, and being able to see the bigger picture, making the crucial judgement decisions that computers could not yet understand, interpret or adequately apply. Accountants used calculators to crunch numbers, pilots used them to calculate takeoff speeds, construction crews used them to calculate how much lumber was needed for a project, and so and so forth.

As computers became faster and software and algorithms more developed, increasingly basic automation began to come onto the scene. The invention of the computer spreadsheet for example, popularized largely by Microsoft Excel, allowed scientists, accountants and businesses alike to play “what if”, to rapidly experiment with a variety of scenarios without having to spend exorbitant amounts of time to re-compute an entire page of formulas and values. The first and most basic forms of autopilots on airplanes consisted merely of the ability to hold a set altitude or fly a defined course heading. But slowly as airplanes started to incorporate flight management computers that could automatically calculate variables such as takeoff speeds based on known takeoff weights, airport runway lengths, temperature and weather conditions, etc these decreased the pilot workload and eventually allowed airlines to entirely do away with flight positions such as flight engineer and flight navigator, items and tasks of which now are entirely automated by the onboard computers. Eventually the job of the modern airline pilot became more akin to systems management and system administrator (almost like an IT job) than it was raw flying. Most modern jetliners are capable of fully piloting themselves using automation from moments after takeoff and all the way down to touchdown, requiring the pilot only to monitor the autopilot and associated systems for when something goes wrong with the automation or during the rare inflight emergency or unusual contingency. An intercontinental flight on a jumbojet that once required eight pilots (two full crews of four each) now routinely only need three (one crew with two present in the flight deck at any one time).

While simple industrial machines (dumb machines) like trucks, tractors, trailers and dozers etc enable a man to do the physical work of many men, thus creating a force/work physical multiplier effect and displacing many manual labor jobs, in the computer age automation allowed a single person to accomplish what once required the intellectual force of many, creating an intellectual or intelligence multiplier. It wasn't that long ago when an IT systems administrator had to build a new server he would have to go through the long entailed process of spec-ing out the hardware requirements, often building the server from scratch by procuring and then installing the processor, the disks, the memory and then spending many hours installing the server operating system, accompanying application software and standards and configuring the system afterwards. Nowadays with computer virtualization a new virtual server can be spun up at the click of a button, and the creation of a new virtual server from a template/clone is largely automated and immediate process. With virtualization (a form of automation, or at least it affords an automation factor) a single systems engineer or systems administrator can do what once took a whole team of a couple of dozen admins. Even if automation will never entirely replace the need for IT systems admins and engineers, it has already displaced what used to be or what would have been the majority of them.

Indeed, no job or industry is immune from the effects of computer automation and what is increasingly seen as “artificial intelligence” (AI) and machine learning (deep learning, or especially general-purpose artificial intelligence, neural network trained to datasets, etc). The only domains left in which humans still currently outperform computers and automation are in the realms of the creative, the intuitive, and the biggest picture decision making processes. As more and more jobs are made obsolete our definition of ‘work’ has shifted to what makes us uniquely human; things that robots and automation and computers and algorithms and machines still cannot do.

Many prominent tech companies such as Apple, Google, Facebook, Uber, Tesla, etc are working on self-driving cars, autonomous drones/UAVs and other forms of automation and bringing these things mainstream and to the popular masses. The implications are widespread and far fetching. There are now kits that can retrofit existing 18-wheelers to make them effectively self-driving. In a few years an entire trucking industry can be turned upside down on its head. Uber for example is developing and testing its own fleet of self-driving cars in preparation for a future in which human drivers will be a thing of the past, cutting down significantly on the element of human labor: drivers. (indeed, car ownership itself may soon be phased out altogether, most of the time a car is sitting there parked at the garage or at office parking, load utilization is less than 10%; the idea of fleets of autonomous cars always driving around 24-7 in circulation in a community pool of cars controlled by computers to populate locations and routes to predict and match real-time demand etc at cheaper than individual total cost of car ownership rates will usher us into a

new paradigm of local/personal transportation) Amazon for its part is also testing autonomous self-flying drones for product delivery. Not only does this threatened to cut out the middle man of distribution (FedEx, UPS, USPS, etc) but it potentially reduces entire modes of transportation, even self-driving trucks won't be needed as much when a self-flying drone can do the same and faster!

Eventually automation will reach a point in which it can automate itself better than a human can do. The developers, coders, programmers that are working on the neural networks and artificial intelligence systems that are responsible for putting people out of a job are not they themselves safe nor immune from the same. Once general purpose artificial intelligence and machine learning can reach a point where it can develop more advanced and refined general purpose artificial intelligence on its own, at a rate and threshold better than human counterparts, then that has a sort of domino chain reaction effect, runaway automation will push machine intelligence past the realm of humans and it will be possible for the first time in human history for machines to create a superintelligence, perhaps capable of solving the deepest mysteries of existence itself, finding that long eluded theory of everything in physics and using that as a top down model for which everything else is re-built and based upon. Perhaps that superintelligence will then understand reality better than we could ever hope to grasp and make the sort of decisions for us that we have not been able to make due to political, legal, religious or other social reasons.

I think it's worth reviewing our status quo notion and definition of 'work' and the associated pride and ego that we often attach to our jobs, our work, and our so-called careers. The irrational humiliation or shame associated with unemployment or underemployment or of not working and of the outdated notions of what truly constitutes a 'job' or what we really mean when we say we are 'working' ... these should all be re-examined. Fundamentally, it all boils down to survival, it's just a paycheck but even money itself is merely a means to an end.

When people refer to "work" (or a "job" etc) no one is talking about manual labor anymore. There are no jobs for manually digging ditches or plowing fields or sowing clothes or planting seeds or harvesting crops by hand anymore. There are jobs for operating machines or overseeing and managing systems that do these tasks, however. The general consensus concedes that 'work' is no longer purely muscle work but largely mental and intellectual 'work'. Driving a car requires some level of refined motor-control ability and a basic amount of intellect that is independent and separate from sheer strength or raw muscle power. Flying a plane even more so... The same is true for virtually every other real job out there right now. Make no mistake, mental work can sometimes be just as hard as physical work, albeit each in very distinctive and different ways, but both require an effort to be directed towards an objective goal, be it a mental one or physical one.

I often wonder why there is this really deep seated notion ingrained in most people that it is okay for machines, robots, automation to take over for our physical work but somehow when these same systems threaten to do things that we believe should be uniquely reserved for us humans (such as creativity, intuition, the arts, song singing, painting, philosophy, writing, coding, policy making, interpretation of laws, judicial decision, brain surgery, deal making, piloting, high level business decisions, etc etc) that we suddenly take offense and go into denial or somehow pushback.

For example, we are not that far away from living in a society in which machines are capable of doing almost all of the “work”, both physically and intellectually and in the manner more effective and efficient and far more productive overall, thus leaving a large majority of the existing human population (>99%) in a position in which not only will they not have a job but also they will not even be needed nor required at all to work anymore. (unemployment as a result of automation displacing jobs is not a bad thing as long as society as a whole recognizes and implements fair policies of reallocating the efficiencies achieved by automation and jobs displaced by automation and then turning around and giving back that wealth and reassigning it back to the people whose jobs were impacted by said automation; after all it's not exactly like the robots/machines/AI will mind not being 'paid' for their 'work' LMAO, the net total actual result for society is exactly the same, in fact I would argue it is better, since that segment of society can now be free to pursue what they really want to do as opposed of what they HAD to do....) Once artificial machine intelligence reaches a certain threshold where it can develop, create and evolve more advanced versions and iterations of itself without human

intervention and do so in a manner that is better than humans could ever do, then surely it will be able to replicate itself physically as well and as well as automatically do everything that such entails, the entire vertical and horizon chains (there will be no need for a small segment of the human population to remain behind in the so-called labor pool in order to continue to work in order to “look after repairing and maintaining the smart machines”, nor to “oversee and watch over the machines to make sure they are on track”... the whole point after all is that these advanced machines will be better than us in all aspects and in all respects and thus making this a total false fallacy and redundant nonsense in the first place).

Humans will be relieved from having to shoulder the burden of having to do any form of ‘work’ whatsoever. No one will ever have to work again and that will be a very good thing for all and for everyone involved. Once this superintelligence automation society gets rolling and becomes self-sustaining it will just manage itself forever without any need for human intervention. It will become better and better at managing itself as time goes on, in fact it will reach a singularity point whereby it will achieve or approach the limit to absolute perfection. Zero maintenance or afterthought required since the artificial intelligence itself is doing the ‘after thinking’ lol. Since wealth is really measured by a societies aggregate ability to extract, manipulate and consume energy and resources, and because machines and AI will be far better at managing and creating such high rates (thus creating much wealthier societies) of consumption this will leave the human population with unlimited free time to actually enjoy life to do absolutely whatever it is that he or she wishes to do

with his or her time/life within certain limits and within his or her basic income/resource allocation by auto-society. GDP, GDP per capita, parity purchasing power, etc ... it doesn't matter what metric is used. The raw amounts of resources underneath the ground remain the same (A.I. might even solve the FUSION problem and then we have infinite free-energy and can finally stop relying on oil etc) , (no matter who or what is putting it to use, be it man or machines) and really there is no contention that AI will be able to extract, convert and utilize these resources and energy (directed towards human consumption of course!, we are not talking Terminator or Matrix here lol) for human consumption at rates far higher/better and more effective and efficient rates and larger total aggregate outputs than humans could ever hope to achieve, this means in such a society by all humans actually agreeing not to 'work' (puts "right-to-work" under a whole new meaning doesn't it!), everyone will actually be maximally wealthy and far better off than say if a small portion or segment or group of flawed and inefficient humans were trying to stubbornly "contribute" to society by "working" in order to maintain the illusion of being irreplaceable or "doing some real good" or some other feeling-good nonsense. (it boils down to being a simple matter of machines extracting and producing goods, resources, services at a rate far faster than any manned society could ever achieve, and then turning around and intelligently distributing it amongst the entire human population in an equitable manner to all members of society, and also optimizing the structure of this hybrid society and symbiotic relationship by setting the total overall machine vs human population ratios, (even capping human population) or rather

the total machine vs total human energy/resource consumption ratio in order to achieve the net effect of maximizing total energy consumption per capita (max resources per person) for the humans as hardcoded directives for the machines)

For the first time in human history, since the dawn of mankind, we are finally close on the brink to solving the deepest mysterious of existence, reality and truth, but the irony is that it won't be mankind that does it but rather a superintelligence spawned by man's initial creation of intelligence machines/ artificial intelligence.

Life begets life. Evolution begets evolution. Once this self-sustaining super-intelligent machine society is in place it will run itself and govern itself and advance itself into perpetuity. It will spread itself to every corner of this Milky Way galaxy (maybe even discover a way to access multiple different universes!!!) while being benevolent to its human creators. This is the grand-ultimate "autopilot". The cavemen whom first discovered fire nearly 350,000 years ago could not have imagined that they were at least in part responsible for setting into initial motion the chain of events that would have ultimately lead to this... Little did Mother Nature know that evolution of opposable thumb in a certain species of primates will someday give rise to a superintelligence capable of unlocking the deepest secrets of the universe itself.

